REMARKS/ARGUMENTS

Claims 9, 11, 13-17, 19 and 20 stand rejected under 35 U.S.C. 102(b) as being anticipated by JP '511 (JP 2001-172511) as evidenced by Sato (USP 4,276,135).

Claim 9 and 11 recite a hydroxyapatite complex or medical material having a structure such that the alkoxysilyl group of the polymer-based material and the hydroxyl group of the hydroxyapatite sintered compact are directly chemically bonded with each other.

In contrast, JP '511 discloses that a polymer-based material is chemically bonded with calcium phosphate-based particles via a carbamate bond obtained by reacting an active hydroxyl group with an active group such as isocyanate group, diether carbonate, or the like (paragraph[0037]). Moreover, JP '511 describes that that the hydroxyl ion of the calcium phosphate-based particles themselves can be utilized as the hydroxyl group (see paragraph [0043]).

It is noted, however, that JP 511 clearly does not disclose Applicants' novel hydroxyapatite complex or medical material in which the alkoxysilyl group of the polymer-based material and the hydroxyl group of the hydroxyapatite sintered compact are directly chemically bonded with each other, as recited in claims 9 and 11. The Examiner admits that JP '511 is silent on the use of the claimed alkoxysilyl group-containing polymer.

Claims 19 and 20, and independent claims 13-17, all recite a ahydroxyapatite complex or medical material wherein the hydroxyapatite complex is formed by bonding the hydroxyapatite sintered compact to the polymer-based material with the molecular chain represented by the chemical formula (1). More specifically, no modification of the hydroxyapatite sintered compact is performed in the present invention. Thus, the hydroxyapatite complex of the present invention has a structure in which X is the hydroxyapatite sintered compact in the chemical formula (1).

In contrast, JP '511 performs a modification of hydroxyapatite complex by using KBE903, in other words, 3-aminopropyltriethoxysilane. Therefore, the calcium phosphate-polymer complex in JP 511 has a structure in which the X is the hydroxyapatite and Y is the polymer-based material. It is obvious, therefore, that the hydroxyapatite complex in the present invention and the hydroxyapatite complex of JP '511 are completely different in their structures.

Accordingly, claims 9, 11, 13-17, 19 and 20 are clearly allowable over the teachings of JP 511.

The Sato reference was cited for its teaching that KBE903 is aminopropyl triethoxysilane. Other than this teaching, Sato fails to add anything of significance to the teachings of JP 511 with respect to the novel recitations in claims 9, 11, 13-17, 19 and 20.

Claims 9, 11, 13-17, 19 and 20 stand rejected under 35 U.S.C. 102(b) as being anticipated by Hino (US 5,814,681). For the reasons set forth hereinafter, it is requested that the Examiner reconsider and withdraw this rejection.

Claims 9 and 11 recite a hydroxyapatite complex or medical material having a structure such that the alkoxysilyl group of the polymer-based material and the hydroxyl group of the hydroxyapatite sintered compact are directly bonded with each other. Claims 19 and 20, and dependent claims 13-17, all recite a hydroxyapatite complex or medical material wherein the hydroxyapatite complex is formed by bonding the hydroxyapatite sintered compact to the polymer-based material with the molecular chain represented by the chemical formula (1). It is submitted that these claims are allowable over the teachings of Hino for the same reasons as those set forth herein with respect to the JP 511 reference.

The present invention has an object to use a hydroxyapatite sintered compact without pre-treatment. Accordingly, the present invention utilizes the hydroxyl group on the surface of the

hydroxyapatite sintered compact in order to form a chemical bond with the polymer-based material. That is, the polymer-based material is modified, but not the hydroxyapatite sintered compact, in the present invention.

On the contrary, Hino introduces an organic group to the surface of hydroxyapatite powder using an organic silane coupling agent such as Y–methacryloxypropltrimethoxysilane. That is, a modification of hydroxyapatite powder is performed in Hino. The Examiner admits that Hino is silent on the use of the claimed alkoxysilyl group-containing polymer.

Thus, the hydroxyapatite complex and medical material recited in claims 9, 11, 13-17, 19 and 20 are structurally different from the product obtained by solidifying the composition of Hino.

Even though the teachings of the JP 511 and Hino references are deficient with respect to the novel recitations in Applicants' claims, the Examiner states that these claims are product-by-process claims and that the determination of patentability must be based on the product itself and not on its method of production. For the reasons set forth hereinafter, it is requested that the Examiner reconsider this position.

First, it is submitted that the recitation of "chemically bonded" in claims 9, 11, 13-17, 19 and 20 is a structural limitation which does not make these claims product-by-process claims. Accordingly, these claims clearly are distinguished by structural limitations over the teachings of the cited references.

Even if claims 9, 11, 19, 20 and dependent claims 13-17 are interpreted as product-by-process claims, it is submitted that the terminology "chemically bonded" implies a structure that should be considered when assessing the allowability of the claims over the prior art. The Examiner's attention is directed to Section 2113 of the Manual of Patent Examining Procedure

wherein it is stated that the structure implied by process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially where the product can only be defined by the process steps by which the product is made, or where the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product.

The Examiner's attention is also directed to the In re Garnero case set forth in Section 2113 wherein the CCPA held that the terminology "interbonded by interfusion" limited the structure of a claimed composite. In that case, the court also noted that terms such as "welded", "intermixed" and "ground in place", "press fitted", and "etched" are capable of construction as structural limitations. Accordingly, the language "chemically bonded" in the present claims should also be interpreted as a structural limitation which clearly defines the claims over the prior art.

The allowance of claims 1-8 and 18 is acknowledged.

In view of the above remarks, it is submitted that claims 9, 11, 13-17, 19 and 20 are allowable to Applicants, and formal allowance thereof is earnestly solicited.

Respectfully submitted,

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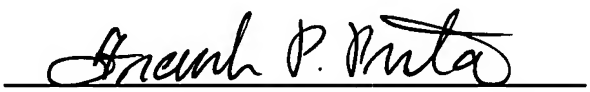
By: 

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